Extended Data Table 1|Non-inferior solutions

$\mathbf{x}^{DV} = (x_1, x_2, x_3)$ $g_i = f_i(x_1, x_2, x_3), i = 1,2; g_3 = f_3(x_1, x_3); g_4 = f_4(x_2, x_3)$

$\mathbf{x}_j^P$	x_1	x_2	x_3	g_1	g_2	g_3	g_4	y_1	y_2	y_3
j=1	0.323	0.378	0.905	0.175	0.617	2.778	2.015	3.376	6.039	-0.606
j=2	0.976	0.064	1.095	0.009	1.906	4.575	2.464	3.722	6.005	-1.136
j=3	0.388	0.324	0.568	0.467	1.385	1.355	0.969	3.209	6.126	-0.279
j=4	0.388	0.232	0.435	0.416	1.376	0.956	0.611	3.144	6.212	-0.055
j=5	1.164	0.327	0.585	1.233	4.468	2.189	1.010	3.614	6.001	-1.075
j=6	1.040	0.064	1.095	0.073	2.162	4.639	2.464	3.761	6.010	-1.200
j=7	0.411	0.217	0.435	0.410	1.426	0.979	0.596	3.148	6.208	-0.064
j=8	1.164	0.327	0.658	1.159	4.321	2.463	1.193	3.642	6.006	-1.149
j=9	0.323	0.379	0.905	0.176	0.619	2.778	2.016	3.376	6.038	-0.606
j=10	0.388	0.327	0.568	0.474	1.396	1.355	0.972	3.210	6.125	-0.283
j=11	1.098	0.355	0.705	1.104	4.050	2.589	1.349	3.622	6.006	-1.159
j=12	1.164	0.327	0.418	1.400	4.802	1.687	0.675	3.561	6.002	-0.908
j=13	1.040	0.091	1.095	0.126	2.241	4.639	2.491	3.762	6.013	-1.226
j=14	1.040	0.060	1.095	0.064	2.149	4.639	2.460	3.760	6.010	-1.195
j=15	0.547	0.318	0.700	0.483	1.742	2.016	1.297	3.317	6.047	-0.565
j=16	0.384	0.232	0.435	0.413	1.362	0.952	0.611	3.143	6.214	-0.051
j=17	0.769	0.314	0.640	0.755	2.735	1.999	1.134	3.387	6.019	-0.723
j=18	0.289	0.324	0.568	0.368	0.992	1.257	0.969	3.186	6.161	-0.181
j=19	0.769	0.486	0.331	1.410	3.871	1.098	0.706	3.333	6.042	-0.586
j=20	1.164	0.327	0.438	1.380	4.761	1.739	0.710	3.567	6.001	-0.929
j=21	1.064	0.311	1.061	0.625	3.068	4.442	2.562	3.781	6.047	-1.436
j=22	1.311	0.080	0.858	0.612	3.766	3.520	1.553	3.813	6.015	-1.249
j=23	0.857	0.327	0.585	0.926	3.239	1.882	1.010	3.415	6.013	-0.768
j=24	1.176	0.375	0.699	1.228	4.432	2.639	1.351	3.678	6.016	-1.250
j=25	0.562	0.309	0.700	0.479	1.773	2.031	1.288	3.321	6.046	-0.570
j=26	1.049	0.311	1.061	0.610	3.008	4.427	2.562	3.772	6.044	-1.421
j=27	0.547	0.347	0.540	0.701	2.148	1.422	0.930	3.256	6.079	-0.434
j=28	1.064	0.376	1.017	0.800	3.352	4.167	2.445	3.768	6.052	-1.458
j=29	1.176	0.310	0.557	1.239	4.519	2.105	0.930	3.609	6.000	-1.042
j=30	0.391	0.292	0.420	0.554	1.597	0.921	0.645	3.152	6.192	-0.103
j=31	1.161	0.327	0.568	1.248	4.491	2.129	0.972	3.606	6.001	-1.056
j=32	1.064	0.182	1.022	0.407	2.761	4.197	2.270	3.738	6.018	-1.268
j=33	1.021	0.379	0.999	0.780	3.222	4.012	2.373	3.730	6.039	-1.398
j=34	0.200	0.246	0.404	0.288	0.728	0.690	0.573	3.097	6.307	0.150
j=35	1.190	0.349	0.557	1.332	4.696	2.121	0.970	3.628	6.002	-1.097

We utilized the NSGA-II algorithm to solve the model and obtained 127 sets of non-inferior solutions. $\mathbf{x}^{DV}$ represents the design variables. $g_1 \sim g_4$ represents the constraint conditions 1-4 corresponding to this set of non-inferior solutions. y_1, y_2, y_3 represents the objective function 1-3. The design variables involved in constraint condition 1 and constraint condition 2 are $x_1 \sim x_3$. The design variables involved in constraint condition 3 are x_1, x_3. The design variables involved in constraint condition 4 are x_2, x_3.

Extended Data Table 1|Non-inferior solutions

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$\mathbf{x}_j^P$	x_1	x_2	x_3	g_1	g_2	g_3	g_4	y_1	y_2	y_3
j=36	0.547	0.349	0.556	0.689	2.122	1.474	0.967	3.262	6.074	-0.452
j=37	0.857	0.326	0.585	0.925	3.238	1.882	1.010	3.415	6.013	-0.768
j=38	0.181	0.322	0.435	0.390	0.820	0.749	0.701	3.120	6.264	0.062
j=39	0.384	0.188	0.438	0.323	1.226	0.958	0.571	3.137	6.232	-0.010
j=40	1.286	0.246	0.569	1.209	4.744	2.258	0.894	3.686	6.003	-1.101
j=41	0.381	0.246	0.661	0.212	0.938	1.693	1.121	3.232	6.123	-0.288
j=42	0.207	0.327	0.350	0.511	1.107	0.575	0.572	3.100	6.290	0.116
j=43	1.069	0.382	0.983	0.850	3.457	3.967	2.314	3.752	6.047	-1.434
j=44	1.064	0.376	1.046	0.770	3.294	4.349	2.566	3.786	6.058	-1.487
j=45	0.058	0.193	0.268	0.177	0.275	0.273	0.337	3.042	6.488	0.481
j=46	0.388	0.322	0.438	0.593	1.640	0.964	0.706	3.163	6.174	-0.148
j=47	1.164	0.326	0.419	1.397	4.797	1.692	0.678	3.562	6.002	-0.910
j=48	1.204	0.309	0.585	1.238	4.576	2.229	0.993	3.640	6.002	-1.098
j=49	0.936	0.327	0.585	1.004	3.553	1.961	1.010	3.461	6.006	-0.847
j=50	0.106	0.310	0.168	0.557	1.015	0.190	0.366	3.050	6.451	0.417
j=51	1.064	0.368	1.046	0.754	3.269	4.349	2.558	3.784	6.056	-1.479
j=52	0.092	0.195	0.275	0.206	0.401	0.319	0.346	3.045	6.463	0.438
j=53	1.069	0.303	1.046	0.629	3.094	4.354	2.493	3.774	6.043	-1.419
j=54	1.171	0.389	0.557	1.392	4.736	2.101	1.009	3.622	6.003	-1.116
j=55	1.173	0.310	0.635	1.159	4.353	2.382	1.116	3.636	6.003	-1.118
j=56	0.204	0.295	0.435	0.359	0.831	0.772	0.674	3.117	6.266	0.066
j=57	0.391	0.320	0.427	0.604	1.668	0.938	0.685	3.160	6.178	-0.138
j=58	1.057	0.353	1.046	0.717	3.194	4.341	2.543	3.776	6.051	-1.456
j=59	0.266	0.211	0.415	0.274	0.869	0.783	0.556	3.106	6.286	0.107
j=60	0.038	0.310	0.108	0.548	0.863	0.073	0.333	3.041	6.527	0.544
j=61	0.333	0.193	0.268	0.452	1.377	0.549	0.337	3.081	6.335	0.205
j=62	0.190	0.329	0.435	0.412	0.875	0.758	0.707	3.123	6.257	0.046
j=63	0.532	0.308	0.337	0.812	2.381	0.872	0.535	3.179	6.163	-0.177
j=64	0.532	0.308	0.543	0.606	1.967	1.417	0.898	3.243	6.093	-0.384
j=65	1.126	0.353	1.046	0.786	3.471	4.411	2.543	3.821	6.068	-1.526
j=66	1.176	0.331	1.039	0.799	3.618	4.415	2.491	3.845	6.073	-1.546
j=67	1.064	0.316	0.514	1.183	4.179	1.856	0.844	3.517	6.003	-0.894
j=68	0.936	0.327	1.010	0.579	2.703	3.995	2.366	3.675	6.018	-1.272
j=69	1.064	0.383	0.621	1.210	4.166	2.222	1.155	3.570	6.001	-1.069
j=70	0.942	0.337	0.573	1.043	3.631	1.927	0.994	3.463	6.005	-0.852

We utilized the NSGA-II algorithm to solve the model and obtained 127 sets of non-inferior solutions. $\mathbf{x}^{DV}$ represents the design variables. $g_1 \sim g_4$ represents the constraint conditions 1-4 corresponding to this set of non-inferior solutions. y_1, y_2, y_3 represents the objective function 1-3. The design variables involved in constraint condition 1 and constraint condition 2 are $x_1 \sim x_3$. The design variables involved in constraint condition 3 are x_1, x_3. The design variables involved in constraint condition 4 are x_2, x_3.

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$\mathbf{x}_j^{\mathbf{P}}$	x_1	x_2	x_3	g_1	g_2	g_3	g_4	y_1	y_2	y_3
j=71	0.333	0.201	0.268	0.467	1.400	0.549	0.345	3.083	6.331	0.198
j=72	0.106	0.310	0.020	0.704	1.310	0.107	0.310	3.040	6.539	0.565
j=73	0.538	0.308	0.406	0.748	2.265	1.033	0.639	3.200	6.135	-0.253
j=74	0.479	0.309	0.700	0.396	1.443	1.948	1.288	3.291	6.065	-0.487
j=75	1.258	0.310	0.557	1.321	4.849	2.188	0.930	3.671	6.004	-1.125
j=76	1.176	0.331	0.577	1.261	4.542	2.174	0.997	3.620	6.002	-1.084
j=77	1.166	0.310	1.019	0.767	3.557	4.281	2.386	3.823	6.060	-1.495
j=78	1.176	0.315	1.029	0.776	3.588	4.351	2.432	3.836	6.066	-1.519
j=79	0.342	0.196	0.330	0.404	1.296	0.670	0.414	3.098	6.298	0.131
j=80	1.058	0.310	1.059	0.619	3.044	4.423	2.553	3.776	6.045	-1.427
j=81	0.106	0.310	0.051	0.674	1.249	0.113	0.315	3.041	6.521	0.534
j=82	0.115	0.310	0.168	0.567	1.055	0.200	0.366	3.051	6.446	0.407
j=83	1.176	0.292	0.953	0.807	3.673	3.901	2.109	3.788	6.044	-1.421
j=84	1.176	0.310	0.683	1.112	4.266	2.576	1.243	3.657	6.007	-1.169
j=85	1.176	0.323	0.474	1.348	4.725	1.848	0.772	3.585	6.000	-0.972
j=86	0.936	0.310	1.010	0.546	2.653	3.995	2.350	3.672	6.016	-1.256
j=87	0.104	0.310	0.077	0.646	1.191	0.122	0.321	3.042	6.506	0.509
j=88	1.176	0.323	1.056	0.766	3.560	4.520	2.553	3.854	6.075	-1.555
j=89	0.837	0.327	0.539	0.952	3.250	1.709	0.909	3.387	6.022	-0.703
j=90	0.532	0.308	0.713	0.436	1.628	2.058	1.325	3.316	6.049	-0.554
j=91	0.513	0.329	0.540	0.631	1.958	1.387	0.912	3.239	6.093	-0.381
j=92	1.250	0.311	1.039	0.832	3.853	4.490	2.471	3.894	6.088	-1.600
j=93	0.015	0.306	0.084	0.543	0.809	0.036	0.320	3.038	6.558	0.595
j=94	1.169	0.323	0.474	1.342	4.697	1.841	0.772	3.579	6.000	-0.965
j=95	1.250	0.311	1.029	0.842	3.874	4.426	2.428	3.888	6.085	-1.589
j=96	0.115	0.318	0.173	0.578	1.068	0.205	0.377	3.054	6.438	0.394
j=97	0.337	0.193	0.268	0.456	1.394	0.553	0.337	3.083	6.333	0.201
j=98	0.111	0.286	0.168	0.516	0.968	0.195	0.343	3.046	6.461	0.435
j=99	1.332	0.287	1.056	0.850	4.076	4.679	2.518	3.961	6.111	-1.675
j=100	0.990	0.327	1.010	0.634	2.921	4.050	2.366	3.707	6.027	-1.327
j=101	1.275	0.249	0.885	0.889	4.079	3.624	1.815	3.816	6.041	-1.409
j=102	0.978	0.323	0.474	1.150	3.933	1.651	0.771	3.448	6.013	-0.774
j=103	1.188	0.323	1.010	0.825	3.702	4.247	2.363	3.835	6.067	-1.521
j=104	1.339	0.287	1.056	0.857	4.105	4.686	2.518	3.966	6.113	-1.682
j=105	1.237	0.324	1.039	0.846	3.843	4.477	2.484	3.887	6.088	-1.601

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$\mathbf{x}_j^{\mathbf{P}}$	x_1	x_2	x_3	g_1	g_2	g_3	g_4	y_1	y_2	y_3
j=106	1.183	0.321	1.056	0.769	3.582	4.529	2.553	3.859	6.077	-1.560
j=107	0.040	0.304	0.084	0.564	0.903	0.061	0.318	3.038	6.544	0.572
j=108	1.181	0.334	0.474	1.376	4.780	1.854	0.782	3.591	6.000	-0.989
j=109	0.006	0.306	0.084	0.534	0.774	0.027	0.320	3.037	6.564	0.604
j=110	1.047	0.334	0.474	1.242	4.243	1.719	0.783	3.496	6.005	-0.855
j=111	1.355	0.283	1.058	0.863	4.153	4.711	2.520	3.978	6.117	-1.695
j=112	0.510	0.329	0.571	0.597	1.885	1.486	0.980	3.250	6.085	-0.409
j=113	1.226	0.192	1.092	0.518	3.296	4.804	2.577	3.892	6.064	-1.510
j=114	0.323	0.289	0.587	0.313	0.984	1.359	0.979	3.194	6.154	-0.199
j=115	1.234	0.283	1.058	0.742	3.669	4.589	2.520	3.889	6.081	-1.574
j=116	1.129	0.249	0.885	0.743	3.495	3.478	1.815	3.711	6.017	-1.263
j=117	0.510	0.350	0.519	0.691	2.051	1.319	0.890	3.235	6.094	-0.379
j=118	1.275	0.239	0.867	0.887	4.085	3.533	1.744	3.805	6.036	-1.382
j=119	1.181	0.357	0.474	1.421	4.849	1.854	0.805	3.596	6.000	-1.012
j=120	1.339	0.276	1.071	0.821	4.045	4.781	2.571	3.974	6.115	-1.687
j=121	1.129	0.341	0.875	0.935	3.789	3.427	1.872	3.722	6.030	-1.345
j=122	0.191	0.318	0.173	0.653	1.370	0.281	0.377	3.062	6.396	0.319
j=123	0.549	0.332	0.571	0.643	2.052	1.526	0.983	3.265	6.074	-0.452
j=124	1.181	0.353	0.474	1.414	4.837	1.854	0.801	3.595	6.000	-1.008
j=125	1.355	0.281	1.058	0.860	4.148	4.711	2.518	3.978	6.117	-1.694
j=126	1.357	0.283	1.036	0.886	4.205	4.577	2.429	3.967	6.111	-1.676
j=127	1.337	0.277	1.058	0.833	4.063	4.693	2.514	3.964	6.110	-1.672

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